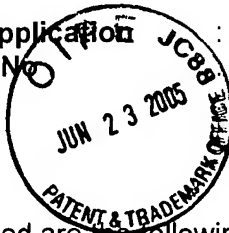


COMMISSIONER FOR PATENTS
P. O. Box 1450
Alexandria, Virginia 22313-1450

IFW
PATENT

Re: Application : Douglas D. Klendworth et al. Case No. : 88-1066B
Serial No. : 10/628,542 Art Unit No. : 1713
Filed : July 28, 2003 Examiner : Ling Siu Choi
For : Process For Making Polyolefin Compositions
Containing Exfoliated Clay



Enclosed are the following documents related to the above-identified application:

- | | |
|---|---|
| (X) Return Receipt of Postcard | () Request for Reconsideration |
| (X) Certificate of Mailing | () Declaration Under 37 C.F.R. § 1.131 |
| () Preliminary Amendment | () Declaration Under 37 C.F.R. § 1.132 |
| () Assignment for Recordal | () Terminal Disclaimer 37 C.F.R. § 1.321(b) |
| () Supplemental Information Disclosure | () Notice of Appeal |
| Statement Under 37 C.F.R. § 1.97(c), | () Brief (3) |
| Form PTO-1449 and non-US References | () Amendment After Allowance 37 C.F.R. § 1.312 |
| () Response to Restriction Requirement | () Issue Fee Transmittal |
| () One-Month Extension of Time Under | () Certificate Under 37 C.F.R. § 3.73(b) |
| 37 C.F.R. § 1.136 (fee noted below) | (X) Response |
| (X) Notice of Non-Compliant Amendment | (X) New Page 2 of Amendment filed May 5, 2005 |
| (37 CFR 1.121) (COPY) | (X) Amendment filed May 5, 2005 (COPY) |

The fee has been calculated as shown below:

CLAIMS AS AMENDED

	Claims Remaining After Amendment	Highest No. Previously Paid for	Present Extra	Rate	Add'l Fee
Total Claims:	6	minus : 20	:	:x \$50	: 0.00
Ind. Claims:	1	minus : 3	:	:x \$200	: 0.00
Fee for Petition of Extension of time (1 month see below)				:	\$: 0.00
TOTAL FEE DUE				:	\$: 0.00

- (X) No additional fee is required.
- () Charge \$_____ to Deposit Account No. 01-2230. Two duplicate copies of this sheet are enclosed.
- (X) Please charge any additional fees or credit overpayment to Deposit Account No. 01-2230.

I hereby certify that this correspondence is being deposited with the United States Postal Service as first-class mail, with sufficient postage, in an envelope addressed to: Commissioner for Patents, P. O. Box 1450, Alexandria, Virginia 22313-1450 on June 21, 2005.

Jonathan L. Schuchardt
Name of Person Signing

Jonathan L. Schuchardt

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June 21, 2005
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10/628542

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Notice of Non-Compliant Amendment (37 CFR 1.121)

The amendment document filed on 55.5 is considered non-compliant because it has failed to meet the requirements of 37 CFR 1.121. In order for the amendment document to be compliant, correction of the following item(s) is required. Only the corrected section of the non-compliant amendment document must be resubmitted (in its entirety), e.g., the entire "Amendments to the claims" section of applicant's amendment document must be re-submitted. 37 CFR 1.121(h).

THE FOLLOWING CHECKED (X) ITEM(S) CAUSE THE AMENDMENT DOCUMENT TO BE NON-COMPLIANT:

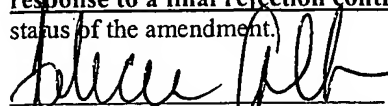
- ☒ 1. Amendments to the specification:
- ☒ A. Amended paragraph(s) do not include markings.
 - ☐ B. New paragraph(s) should not be underlined.
 - ☐ C. Other _____
- ☐ 2. Abstract:
- ☐ A. Not presented on a separate sheet. 37 CFR 1.72.
 - ☐ B. Other _____
- ☐ 3. Amendments to the drawings: _____
- ☐ 4. Amendments to the claims:
- ☐ A. A complete listing of all of the claims is not present.
 - ☐ B. The listing of claims does not include the text of all pending claims (including withdrawn claims)
 - ☐ C. Each claim has not been provided with the proper status identifier, and as such, the individual status of each claim cannot be identified. Note: the status of every claim must be indicated after its claim number by using one of the following 7 status identifiers: (Original), (Currently amended), (Canceled), (Withdrawn), (Previously presented), (New) and (Not entered).
 - ☐ D. The claims of this amendment paper have not been presented in ascending numerical order.
 - ☐ E. Other: _____

For further explanation of the amendment format required by 37 CFR 1.121, see MPEP Sec. 714 and the USPTO website at <http://www.uspto.gov/web/offices/pac/dapp/opla/preognotice/officeflyer.pdf>.

If the non-compliant amendment is a **PRELIMINARY AMENDMENT**, applicant is given ONE MONTH from the mail date of this letter to supply the corrected section which complies with 37 CFR 1.121. Failure to comply with 37 CFR 1.121 will result in non-entry of the preliminary amendment and examination on the merits will commence without consideration of the proposed changes in the preliminary amendment(s). This notice is not an action under 35 U.S.C. 132, and this ONE MONTH time limit is not extendable.

If the non-compliant amendment is a reply to a **NON-FINAL OFFICE ACTION** (including a submission for an RCE), and since the amendment appears to be a *bona fide* attempt to be a reply (37 CFR 1.135(c)), applicant is given a TIME PERIOD of ONE MONTH from the mailing of this notice within which to re-submit the corrected section which complies with 37 CFR 1.121 in order to avoid abandonment. **EXTENSIONS OF THIS TIME PERIOD ARE AVAILABLE UNDER 37 CFR 1.136(a).**

If the amendment is a reply to a **FINAL REJECTION**, this form may be an attachment to an Advisory Action. The period for response to a final rejection continues to run from the date set in the final rejection, and is not affected by the non-compliant status of the amendment.


Legal Instruments Examiner (LIE)

571 272 8984
Telephone No.

88-1066B



COPY

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of

Douglas D. Klendworth et al.

Ser. No. 10/628,542

Filed: July 28, 2003

For: PROCESS FOR MAKING POLYOLEFIN
COMPOSITIONS CONTAINING
EXFOLIATED CLAY

Group Art Unit 1713

Examiner: Ling-Siu Choi

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

AMENDMENT UNDER 37 C.F.R. § 1.121

Sir:

Please enter the following in response to the Office action mailed March 25, 2005.

Amendments to the Specification: See page 2.

Amendments to the Claims: None.

Remarks: Begin on page 3.

In the Specification:

COPY

Please amend the reference to related application to read as follows:

--This is a division of Application Ser. No. 10/055,072, filed January 23,
2002, now U.S. Pat. No. 6,646,072.--

REMARKS

COPY

I. Status of the Claims

Claims 20-25 are pending. The specification is amended to update the cross-reference to the parent application, which has now issued. Otherwise, no amendments are made.

II. Response to the Rejection under 35 U.S.C. § 102(b) based on Bottrill

Applicants traverse the rejection of claims 20-25 under 35 U.S.C. § 102(b) as anticipated by Bottrill (U.S. Pat. No. 4,473,672) and respectfully ask the Examiner to reconsider and withdraw the rejection in view of the following remarks.

Bottrill teaches a process involving treating a filler selected from graphite, carbon black, an aluminosilicate clay, mica, talc, vermiculite or glass fibers with a magnesium compound. The treated filler is combined with a transition metal, and an olefin is polymerized with addition of an organoaluminum compound to give a filled polyolefin composition containing from 10 to 90% filler. Bottrill does not teach exfoliated clay-filled polyolefins, as Applicants' claims require.

Smectite clays are well described in the literature (see Izumi, Y. et al., Zeolite, Clay and Heteropoly Acid in Organic Reactions, VCH Publishers Inc. (1992)). Clays are primarily classified into four groups according to their layer charge: (1) pyrophyllite-talc, (2) smectites, (3) vermiculites and (4) micas. Pyrophyllite and talc are electrically neutral. Smectite clay minerals have cation exchange capacity in the range of 60-100 meq/100 g-clay. Bottrill teaches (column 2, lines 3-5) that a "wide range of filler materials may be used in accordance with the process of the invention and they include organic and inorganic fillers."

A wide range of fillers cannot be used to prepare Applicants' claimed exfoliated clay-filled polyolefins. Indeed, Applicants' claims are limited to smectite clays, and other fillers do not provide exfoliation. Bottrill doesn't mention smectite clays, but rather prefers other fillers which cannot exfoliate. In

fact, the Examiner has already acknowledged Bottrill's failure to teach olefin polymerizations that are performed in the presence of smectite clays (see Examiner's Reasons for Allowance, parent application). Carbon black and glass fibers, e.g., cannot exfoliate; they do not have a layered structure. Applicants' claims require smectite clays. While other types of clay may be layered, it is believed that the particular structure of the smectite clay is what enables it to exfoliate in the preparation of Applicants' clay-filled polyolefins. In contrast, other clays, such as talc and mica should not exfoliate.

Among the broad classes of aluminosilicate clays, Bottrill (column 2, lines 15-16) prefers the plate-like materials such as mica, talc and vermiculite. Three of the four major types of clay are mentioned and are preferred. The one type (of the four types) of clay that is not preferred is smectite clay, which is the only clay type suitable for Applicants' composition. Because Bottrill doesn't teach polyolefins filled with exfoliated smectite clays, Bottrill does not anticipate Applicants' invention.

Nor would Applicants' claimed invention have been obvious from Bottrill because nothing in Bottrill suggests exfoliated clay-filled polyolefin compositions.

In conclusion, the Examiner should reconsider and withdraw the Section 102 rejection based on Bottrill.

III. Response to the Rejection under 35 U.S.C. § 102(b) based on Alexandre

Applicants traverse the rejection of claims 20-25 under 35 U.S.C. § 102(b) as anticipated by Alexandre et al. (U.S. Pat. No. 6,465,543), and they respectfully ask the Examiner to reconsider and withdraw the rejection in view of the following remarks.

Alexandre teaches dispersing a hydrophilic clay in water to swell the clay, removing the water from the swelled clay to form an organophilic clay, drying the clay, contacting the clay with an alkyl aluminoxane to form a clay/alkyl aluminoxane complex, and contacting the complex with a catalyst followed by an

olefin monomer. The alkyl aluminoxane is preferably MAO, which is reacted with the clay. It is preferable to remove any unreacted MAO (column 3, lines 4–17).

Aside from other differences, the many important distinctions between Alexandre's process and Applicants' process will lead to different compositions. Moreover, Alexandre also uses different reactants that a skilled person appreciates will produce different compositions.

Step (c) of Alexandre is the formation of a clay/alkyl aluminoxane complex. Applicants do not treat the dry clay with an alkyl aluminoxane to prepare a clay/alkyl aluminoxane. Applicants do not use an aluminoxane; instead, they use a different type of aluminum compound, which is well described (page 6, line 22 – page 7, line 5). Because Alexandre uses different reactants and prepares a clay/alkyl aluminoxane, the reference does not teach Applicants' claimed composition.

The Examiner has acknowledged that Alexandre provides no basis for anticipating the process claims now issued in the parent case. In his notice of allowability for U.S. Pat. No. 6,646,072, he wrote:

Alexandre et al. do not teach or fairly suggest a process for polyolefin polymerization in the presence of an organoaluminum cocatalyst which is selected from the group consisting of trialkyl aluminums, triaryl aluminums, alkyl aluminum halides, alkyl aluminum dihalides and mixtures thereof.

Nor would the clay-filled polyolefins resulting from such a process be the same as those now claimed by Applicants. Moreover, because a skilled person lacks motivation to modify Alexandre's teachings in a way that arrives at Applicants' claimed compositions, Applicants' claims also meet the patentability requirements of Section 103.

In conclusion, the Examiner should reconsider and withdraw the Section 102 rejection based on Alexandre.

IV. Response to the Rejection under 35 U.S.C. § 102(b) based on Maxfield

Applicants traverse the rejection of claims 20-25 under 35 U.S.C. § 102(b) as anticipated by Maxfield et al. (WO 95/06090) and respectfully ask the Examiner to reconsider and withdraw the rejection in view of the following remarks.

Maxfield teaches (page 7, lines 34-37) the reaction of a filler with one or more organometallic materials selected from organosilanes, organotitanates, organozirconates, or a combination thereof, where the organometallic material has reacted with the layered particles. Maxfield further states (page 13, lines 22-30) that the organosilanes, organotitanates or organozirconates are critical and have (a) one or more moieties that are reactive with the layers of the layered material and (b) one or more moieties that are reactive with one or more polymer precursor or with the polymer formed to form a covalent bond. The functional groups proposed for the reaction with olefins are described on page 23, lines 31-37. Maxfield's species are dual purpose; they react with the filler to form covalent bonds and also react with the polymer to form covalent bonds. As such, they serve to chemically attach the polymer to the filler.

Applicants do not react their smectite clay with the organometallic species taught by Maxfield. Maxfield teaches the criticality of using an organometallic compound that forms a covalent bond with the monomer or polymer, and Applicants do not use such a compound; therefore, Applicants make a different composition than Maxfield. The Examiner previously recognized (at least implicitly) that Maxfield does not anticipate Applicants' claimed compositions when he stated: "Maxfield does not teach or fairly suggest a process for olefin polymerization in the presence of a Ziegler-Natta catalyst and an organoaluminum cocatalyst" (see Examiner's Reasons for Allowance, parent application). Finally, there is no motivation to modify Maxfield by leaving out the functionalized reactive organometallic species, so the claimed compositions also meet the patentability requirements of Section 103.

In conclusion, the Examiner should reconsider and withdraw the Section 102 rejection based on Maxfield.

V. Conclusion

Applicants respectfully ask the Examiner to reconsider and withdraw the three rejections under Section 102(b), and pass the case to issue. Applicants invite the Examiner to telephone their attorney at (610) 359-2276 if he believes that a discussion of the application might be helpful.

I hereby certify that this correspondence is being deposited with the United States Postal Service as first-class mail, with sufficient postage, in an envelope addressed to: Commissioner for Patents, P.O. Box. 1450, Alexandria, VA 22313-1450 on May 2, 2005.

Jonathan L. Schuchardt
Name of person signing

Jonathan L. Schuchardt
Signature

Respectfully submitted,
Douglas D. Klendworth et al.

By: Jonathan L. Schuchardt

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May 2, 2005